

**Comments on
“Site Specific Exposure and Risk Assessment for PCBs, Estabrook School, Lexington, MA”**

**Prepared by Linda Phillips and John Schaum, EPA/NCEA
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Background Dietary Intake Assumptions

- Version 1.1 of the PCB Exposure Estimation Tool, developed by EPA/NCEA, used data from FDA’s 1997 Total Diet Study. In contrast, the site-specific risk assessment uses dietary background values based on updated information from FDA’s 2003 Total Diet Study. Recently, EPA contacted FDA and obtained updated (but unpublished) dietary estimates based on the 2003 data. The newer dietary intake values from FDA are similar to those estimated in the site-specific risk assessment for the Estabrook School. Therefore, the dietary values used in the site-specific assessment appear to be appropriate. Revision of the dietary data has a significant impact on the target indoor air values for schools for some age groups (see additional comments in results section below).
- The uncertainty assessment performed for the site-specific analysis used dietary estimates that were 20% higher than those obtained using the FDA 2003 Total Diet Study values. It is not clear how this estimate was derived or whether it was appropriately conservative. Note that the dietary values from 1997 were 4 times higher than those from 2003 for the 3 to <6 year age group. This may indicate that an uncertainty estimate of 20% higher may be unreasonably low.
- The uncertainty discussion of dietary intake values implies that there may be a trend towards lower values in recent years given that the FDA values for 2003 were lower than those in 1997. Given the uncertainties associated with the data, it is not clear if these decreasing trends are real or simply artifacts of the data limitations. Also, it should be noted that the dietary intake values are based only on foods in which PCBs were detected. PCB exposures from food may actually be higher if PCBs are present in foods at levels below the current detection limits. Therefore, suggestions that dietary intake may be lower is not well supported with the data currently available.

Non-dietary Background Assumptions

- Since this is a site-specific risk assessment, it would be best to use site-specific background concentrations, if available. Section 2.2.2 refers to background concentrations from New Bedford, MA, but these values were not used in the site-specific risk assessment because that community has a “well-documented history of PCB contamination,” and the values are not representative of background concentrations in the Estabrook community. We agree that these data should not be used in the site-specific assessment if they are not representative.
- Section 4.2 of the site-specific assessment indicates that the New Bedford values were used in an uncertainty assessment. According to the site-specific risk assessment report, the target

indoor air concentrations would decrease by 10 to 19% assuming that background exposure in the Estabrook School community is more reflective of New Bedford than the Tool default values. These results cannot be verified because the New Bedford concentrations were not provided.

- It appears that the site-specific risk assessment uses time activity patterns (i.e., time in different classrooms where different PCB concentrations were observed) to calculate risk. It also appears to adjust room concentrations based on ventilation rates. This appears to be an appropriate approach. However, it is difficult to verify the average concentrations of PCBs to which students and adult staff were assumed to be exposed without specific data on the time activity patterns, concentrations, and spreadsheets used in these calculations. Likewise, information on how room concentrations were adjusted according to ventilation rates was not provided, and calculations could not be verified.
- It is not clear how the data in Table 2.6 are being used in the assessment. If the purpose is to calculate indoor air target concentrations, how are these concentration values being used? Do these concentrations represent concentrations to which student were exposed before remedial activities? Does that mean that the target concentrations are for the period beginning on November 7, 2010?

Time in School Assumptions

- Table 2.3 of the site-specific assessment indicates that the number of school days and the time spent in schools are higher for the Estabrook School than the default values used in the PCB Exposure Estimation Tool. However, the text indicates that a portion of the days are partial days. Therefore, the overall time spent in school is similar (approximately 2% lower) to the values used in the PCB Exposure Estimation Tool. Use of these lower values does not significantly affect the results.
- Should the timeframes in Table 2.6 (beginning 8/31/2010) match those cited in Section 2.2.5.2 (beginning 8/29, 2010)? What concentrations were used for Scenario B after 11/6/2010? Are the target risks calculated in the assessment meant to represent the timeframe beginning after 11/6/2010?

Scenarios

- The site-specific risk assessment relies on 4 scenarios for estimating risk. Scenarios A through C are based on different time frames spent in school. Scenario D appears to average higher exposures occurring during the 6 years at the Estabrook School with lower exposures that would occur during the middle and high school years, to calculate a higher target indoor air concentration for the Estabrook School. Averaging over 13 years does not appear to be an appropriate or conservative approach for estimating target indoor air concentrations at the Estabrook School.
- The difference between assumptions in Scenario B and C is not clear.

- We liked the approach of calculating exposures over short intervals, summing and then averaging over a longer time period (although as discussed above the averaging time should not be too long as done in Scenario D).
- We also liked the graph showing how the exposures change over time (i.e., Figure 3-1).

RfDs for Aroclor 1254 and 1016

- Figure 2.1 comparing the profiles of the Aroclors and school air may be clearer if done in 2-D style rather than 3-D.
- Use of the RfD for Aroclor 1254 is more conservative and is recommended for use in estimating an acceptable level of PCB exposure via inhalation.

Results

- Using the PCB Exposure Estimation Tool and changing the dietary intake values to those that reflect the 2003 FDA Total Diet Study data, while keeping all other assumptions the same, would result in target indoor air concentrations as follows:
 - 3 to <6 years: 200 ng/m³
 - 6 to < 12 years: 300 ng/m³
 - Adult staff: 500 ng/m³

These values are similar to those provided for Aroclor 1254 in Table 3.2 of the site-specific risk assessment report.

- It is not clear what the target concentrations in Table 3.2 are meant to represent. Are these target concentrations for homeroom classes?
- The text indicates that the outputs of the site-specific risk assessment are target indoor air concentrations (not risk values). However, indoor air concentration input values and background exposure values are provided in Tables 2.6 and 3.1. Additional information on how these data are used in calculating target indoor air concentrations would be helpful.
- In Table 2.7, there seems to be a problem with the total exposure values for grades 1 through 4. Should total exposures be the sum of background and school exposures?
- Table 3.1 provides information on background exposure by pathway. It is not clear to which Exposure Scenario these data pertain.
- The target value for Scenario D is reported in Section 3.2 to be 1,400 ng/m³, but it is not clear whether this is based on the RfD for Aroclor 1254 or 1016.

Summary

- The contractor used a time step approach that facilitated incorporating site specific conditions and presenting changes in exposure over time. However, the transparency of this complex approach needs improvement (i.e., there is a need to be clearer about input assumptions and how the calculations were made).

- The target indoor air PCB concentrations provided in the site-specific risk assessment, based on the RfD for Aroclor 1254, for the Estabrook School (Scenarios A and B Table 3.2) are similar to those estimated with the PCB Exposure Estimation Tool after revising the dietary background data to reflect updated FDA estimates. Thus, the target indoor air concentrations based on Aroclor 1254 for Scenarios A and B in the site specific report appear to be appropriate.
- It is recommended that the RfD for Aroclor 1254 be used for the estimation of an acceptable level of PCB exposure via inhalation.